Removal of ISMP References from SRD Section 4.5, Fire Protection

Attachment to Safety Evaluation SE-W375-99-00013, Rev. 0

SRD Safety Criterion	Cited Implementing Standards		Reconciliation Comments
	Integrated Safety Management Plan	Other Implementing Standards	
4.5-8 The facility shall include physical access and appropriate equipment to facilitate effective intervention by the Hanford Site fire department, such as an interior standpipe system.	**Section 3.10 Emergency Preparedness** (The following except is the only applicable text in this section.) The facility design facilitates access and intervention by the Hanford Site fire department (e.g., the ability to connect to the interior standpipe system).	**DOE_G 440.1 Section III 6.7** Physical access and appropriate equipment to facilitate effective intervention by the fire department, such as an interior standpipe system(s) in multi-story or large facilities with complex configurations.	This Safety Criterion deals only with physical access and equipment. DOE_G 440.1 adequately addresses this subject; the ISMP reference does not add requirements that are specifically applicable to this safety criterion. (Note the similarity of wording with DOE_G 440.1.) Therefore, the ISMP reference may be deleted without changing the way that the safety criterion is implemented. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB).

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4.5-15 The fire protection program will include: (1) organization, training, and responsibilities of the fire protection staff, including a trained and equipped fire brigade;	**Section 1.3.9 Quality Assurance Program** (excerpts – Please see document; Section too lengthy to include here.) The application of the requirements of the QAP continues during design, procurement, construction, startup, testing, inspections, operations, maintenance, modifications, and deactivation of the facility. Administrative processes such as training, procedure development, and configuration management are subject to the requirements of the QAP. Different aspects of the implementation of the QAP are discussed in the following parts of the ISMP: 1) Chapter 2.0 “Compliance with Laws and Regulations” 2) Section 3.5 “Quality Assurance Program” 3) Section 5.4 “Compliance Audits” 4) Chapter 10.0 “Assessments”. **Section 3.10 Emergency Preparedness** (see above) **Section 3.15 Training and Qualification** (Please see document; Section too lengthy to include here.) **Chapter 11 ORGANIZATION ROLES, RESPONSIBILITIES AND AUTHORITIES** (Please see document; Chapter too lengthy to include here.)	**DOE_G 440.1 Section III 4.2** Comprehensive, written fire protection criteria that reflect additional site-specific aspects of the fire protection program, including: the organization, training and responsibilities of the fire protection staff; administrative aspects of the fire protection program; and requirements for the design, installation, operability, inspection, maintenance and testing of fire protection systems. **NFPA 801 ¶ 2-8** 2-8 Fire Emergency Organization. 2-8.1 A fire emergency organization shall be provided. 2-8.2 The size of the facility and its staff the complexity of fire-fighting problems, and the availability and response time of a public fire department shall determine the composition of the fire emergency organization. 2-8.3 Fire emergency organizations shall conduct drills at least quarterly, and they shall be critiqued by competent individuals. The drill critique shall be documented, and recommendations for improvements shall be implemented. Practice sessions shall be coordinated around previously developed valid emergency scenarios particular to the Facility.	This Safety Criterion describes the *features* to be included in a fire protection program. The cited DOE and NFPA implementing standards adequately address these features. None of the ISMP references refer to the fire protection program. The ISMP references address broad issues such as QA and training that apply to all elements of the facility design and operation. Commitments to these elements are made in other sections of the SRD or in the QA Program. These commitments as well as the ISMP are a part of the AB. Removal of the ISMP references from this Safety Criterion does not eliminate these commitments. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB).
(2) inspection, testing, and maintenance of all fire protection systems by personnel properly qualified by experience and training in fire protection systems; (3) surveillance to ensure that fire barriers are in place and that fire suppression systems and components are operable;		**NFPA 801 ¶ 2-5** 2-5 Testing, Inspection, and Maintenance. 2-5.1 Upon installation, all fire protection systems shall be inspected and tested in accordance with the applicable documents referenced in Chapter 4. 2-5.2 All fire protection systems and equipment shall be periodically inspected, tested, and maintained in accordance with NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, and the applicable documents referenced in Chapter 4. 2-5.3 Testing, inspection, and maintenance shall be documented by means of written procedures, with results and follow-up actions recorded. Specific acceptance criteria shall be provided for each operation.	
(4) training of all employees in basic fire safety; and		**NFPA 801 ¶ 2-4 (a)** 2-4 Fire Prevention Program. A written fire prevention program shall be established and shall include the following: (a) Fire safety information for all employees and contractors, including familiarization with fire prevention procedures, emergency alarms and procedures, and procedures for reporting a fire…	
(5) periodic performance of fire drills.		**DOE_G 440.1 Section IV 6.8** When no site fire department or brigade exists and when reliance will be placed on off-site fire departments, a plan should be developed that details how such forces will be expected to respond in conjunction with the site emergency plan and how appropriate training and site familiarization will be provided to ensure that the off-site fire departments will be prepared for fires that occur on site. Appropriate drills should be performed periodically to verify the effectiveness of the plan. **NFPA 801 ¶ 2-8.3** Fire emergency organizations shall conduct drills at least quarterly, and they shall be critiqued by competent individuals. The drill critique shall be documented, and recommendations for improvements shall be implemented. Practice sessions shall be coordinated around previously developed valid emergency scenarios particular to the Facility.	.

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4.5-16 The fire protection program will include a plan to identify, prioritize and monitor the status of fire protection-related appraisal findings/recommendations until final resolution is achieved. When final resolution will be significantly delayed, appropriate interim compensatory measures shall be implemented to minimize the fire risk.	**Chapter 10 ASSESSMENTS** (Please see document; chapter too lengthy to include here.)	**DOE_G 440.1 Section III 4.10** A program to identify, prioritize and monitor the status of fire protection-related appraisal findings/recommendations until final resolution is achieved. When final resolution will be significantly delayed, appropriate interim compensatory measures should be implemented to minimize the fire risk. **DOE_G440.1 Section IV.7.6** Assessment reports should include a description of what was done during the effort (areas toured, documents reviewed, people interviewed). It should feature a "baseline" description of the facility, hazards and other occupancy considerations, and fire protection features. In addition, the report should document changes of significance that have occurred within the facility since the last assessment that affect fire safety, and it should list all noted deficiencies, along with a recommendation for remediation and interim compensatory measures, if necessary, pending resolution. A "model" assessment report is contained in the DOE Fire Protection Resource Manual (Handbook).	The Project is committed to doing self-assessments per the QA Program and the ISMP, which remain parts of the authorization basis. The DOE implementing standard specifically addresses the safety criterion; the ISMP reference does not include additional requirements specific to fire protection. Therefore, the ISMP reference may be deleted without changing the way that the safety criterion is implemented. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB).
4.5-17 The fire protection program shall ensure fire protection requirements are documented and incorporated in the plans and specifications for all new facilities and for significant modifications of existing facilities. This includes a documented review by a qualified fire protection engineer of plans, specifications, procedures, and acceptance tests.	**Section 1.3.16 Configuration Management** (Please see document; section too lengthy to include here.) **Chapter 8 .0 DOCUMENT CONTROL AND MAINTENANCE** The quality assurance program (QAP) requirements for the Tank Waste Remediation System-Privatization (TWRS-P) Project records management system is provided in Section 4.0, "Documents and Records," of *Tank Waste Remediation System Privatization Project Quality Assurance Program and Implementation Plan* (BNFL 1998c). PC06-Q-0004.1, *QA Document Contro*l, provides the corporate BNFL policies for document control; QA-01-TWRS, *Project Document Contro*l, and QA-08-TWRS, *QA Record*s, provide specific processes for document and record control. Details on the records management program are described in ISAR Section 3.8, "Records Management." Documents are prepared, reviewed, approved, issued, and revised to prescribe processes, specify requirements, and establish design. Safety documents developed as a part of the safety management process controlled by the QAP include but are not limited to those identified in Table 8-1. The column "Records" lists the documents that address the items in the "Subject" column. (See document for Table 8-1)	**DOE_G 440.1 Section III 4.4** A system to ensure that the requirements of the DOE fire protection program are documented and incorporated in the plans and specifications for all new facilities and for significant modifications of existing facilities. This includes a documented review by a qualified fire protection engineer of plans, specifications, procedures, and acceptance tests. **DOE_440.1 Section IV 2.0 DOCUMENTATION** 2.1. DOE Order 420.1, Section 4.2.1 and the corresponding CRD establish requirements for fire protection program documentation. 2.2. The program should be completely documented (such as in the Standards Requirements Identification Document). This includes a description of applicable fire safety requirements in contracts and leases, where appropriate. 2.3. Documentation should also include a description of the fire protection organization and its roles and responsibilities in relation to other organizational entities. It is preferable, although not always essential, to have all fire protection-related line activities under a single line manager to avoid unnecessary duplication and costs. 2.4. Training and qualification records of individuals having fire protection program responsibilities should be readily available and in an auditable form. 2.5. Appropriate fire protection documentation includes copies of all fire hazards analyses and at least the two most recent facility assessment reports in a continually updated filing system. The fire hazards analyses and facility assessment reports may be combined, provided that they address all essential elements as defined below. (The DOE Fire Protection Resource Manual (Handbook) contains copies of "models" of separate and combined FHAs and assessment reports.) Facility documentation should also include copies of any Exemptions and Equivalencies that have been approved by DOE. 2.6. Construction projects should feature a file in which all significant decisions and reports concerning fire protection can be found. Critical documents in this file should be maintained for future reference. 2.7. The organization(s) responsible for inspection, testing, and maintenance of fire protection features should maintain records of recent (not less than one year) activities as well as a file(s) of all inspection, testing and maintenance procedures. Unnecessary duplication of procedures is discouraged. A single governing procedure with unique system- or facility-specific conditions highlighted is considered acceptable. 2.8. Site fire departments and other related emergency response organizations (such as brigades or emergency squads) should maintain a current file with all Standard Operating Procedures and fire pre-plans. A program should be in place to ensure that this documentation is updated at appropriate intervals. Pre-plans should be developed on the basis of input from the site fire protection engineering staff as well as emergency responders. 2.9. Emergency response records should conform with DOE reporting requirements and should be based on national standards of fire incident reporting (NFPA 902M) in lieu of site-specific reporting formats. This will facilitate consistent reporting across the Department. 2.10. Nothing in this section prevents or discourages the use of computerized information management techniques for the creation, maintenance and dissemination of relevant documentation pertaining to the fire protection program.	The DOE implementing standard specifically addresses the safety criterion; the ISMP reference does not include additional requirements specific to fire protection. Therefore, the ISMP reference may be deleted without changing the way that the safety criterion is implemented. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB). Per SRD Safety Criteria 4.0, Engineering and Design, the WTP facilities are subject to configuration management.

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4.5-18 The fire protection program shall include a comprehensive, documented fire protection self-assessment program, which includes all aspects (program and facility) of the fire protection program.	**Chapter 10 ASSESSMENTS** (Please see document; chapter too lengthy to include here.)	**DOE_G 440.1 Section III 4.9** A comprehensive, documented fire protection self-assessment program, which includes all aspects (program and facility) of the fire protection program. Assessments should be performed on a regular basis at a frequency established by DOE. **DOE_G 440.1, Section IV 7.0. FIRE SAFETY ASSESSMENTS** 7.1. DOE Order 420.1, paragraph 4.2.1.9 and the corresponding CRD require a comprehensive fire protection self-assessment program. 7.2. The principal objective of a fire safety assessment is to identify significant fire safety deficiencies that would prevent the achievement of DOE's fire safety policy objectives. 7.3. Facility and programmatic assessments should be performed by a fire protection engineer with an appropriate level of knowledge and experience in the application of fire safety codes and standards to diverse facilities. Fire department assessments should be performed by an individual with an appropriate level of knowledge and experience in all facets of fire department organization, equipment, and operations. Assessments should encompass the following elements of the fire protection program: 7.3.1. Program-related: • Comprehensiveness of the fire protection program • Procedures for engineering design and review • Procedures for maintenance, testing, and inspection • Fire protection engineering staff (number, qualifications, training) • Fire suppression organization (personnel and training) • Emergency medical response organization • Hazardous material release containment and emergency cleanup organization • Fire suppression mutual aid agreements • Management support • Exemptions and documented equivalencies 7.3.2. Facility-related: • Fire protection of safety class equipment • Life safety considerations • Fire protection of vital programs • Fire protection of high-value property • Fire suppression equipment • Water runoff • Pre-fire plans • Fire apparatus accessibility • Completeness of fire hazards analyses • Fire barrier integrity • Completeness of fire loss potential (MPFL) determinations • Fire safety training 7.3.3. Combined Aspects (Program and Facility): • Conformance with applicable Orders, codes and standards • Inspection, testing, and maintenance reports • Adequacy of facility appraisal reports • Tests, inspections, procedures, and records for maintaining fire protection systems and features • Administrative controls • Temporary protection and compensatory measures • Status of findings from previous assessments 7.4. Conformance with applicable but outdated consensus standards may not, in itself, justify a conclusion that a facility has achieved an acceptable level of safety. The code of record may be significantly nonconservative in terms of current design requirements, such as seismic design criteria. In such instances, the most recent code or standard may be applied selectively in the assessment as a basis for drawing conclusions regarding the adequacy of fire protection. 7.5. The frequency of assessments should be as follows: 7.5.1.Annual fire protection assessments should be made of facilities valued in excess of $100 million, facilities considered to be a high hazard, or those in which vital programs are involved as defined by DOE. 7.5.2.Remaining facilities should be assessed at least every 3 years or at frequencies determined by the AHJ. 7.5.3.Comprehensive assessments of fire protection program elements should be made every 2 years. 7.6. Assessment reports should include a description of what was done during the effort (areas toured, documents reviewed, people interviewed). It should feature a "baseline" description of the facility, hazards and other occupancy considerations, and fire protection features. In addition, the report should document changes of significance that have occurred within the facility since the last assessment that affect fire safety, and it should list all noted deficiencies, along with a recommendation for remediation and interim compensatory measures, if necessary, pending resolution. A "model" assessment report is contained in the DOE Fire Protection Resource Manual (Handbook).	The Project is committed to doing self-assessments per the QA Program and the ISMP, which remain parts of the authorization basis. The DOE implementing standard specifically addresses the safety criterion; the ISMP reference does not include additional requirements specific to fire protection. Therefore, the ISMP reference may be deleted without changing the way that the safety criterion is implemented. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB).

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4.5-20 A Fire Hazard Analysis (FHA) of the facility shall be performed. Such a systematic analysis shall divide the facility into "fire areas" and evaluate the fire safety of each area and of the facility as a whole. The analysis shall, for each fire area: (1) Account for all radioactive, hazardous, and combustible materials, including estimates of their heat content; (2) Describe the processes performed and their potential for fire or explosion; (3) Account for the sources of heat and flame; (4) List the fire detection and suppression equipment; and (5) Consider credible fire scenarios and evaluate the adequacy of the fire protection measures. In addition, the FHA shall consider other buildings or installations close to process buildings that contain flammable, combustible, or reactive liquid or gas storage. The FHA shall confirm that the facility can be placed in a safe state during and after all credible fire and explosion conditions.	**Section 4.2.3.1 Safety Analysis Reports** The format and content of the Preliminary Safety Analysis Report (PSAR) and Final Safety Analysis Report (FSAR) are in accordance with the guidance provided in U.S. Nuclear Regulatory Commission (NRC) Regulatory Guide 3.52, *Standard Format and Content for the Health and Safety Sections of License Applications for Fuel Cycle Facilities*, draft (NRC 1995a). To facilitate the review of the SARs by the regulator, the SAR content also gives consideration to the review guidance provided in *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*, NUREG-1520, draft (NRC 1995b). The format and content of the SARs are tailored to the nature of the TWRS-P facility relative to the hazards and hazardous situations identified by the PHA. Table 4-1 lists the planned deviations from the format and content guidance of Regulatory Guide 3.52 in this regard. These deviations include both format changes in terms of added SAR sections and content changes for several of the SAR sections. For example, the results of criticality calculations summarized in the ISMP Section 3.8, “Criticality Safety,” indicated that criticality is not a significant hazard for the TWRS-P Facility. Therefore, the content of SAR Chapter 6.0, “Nuclear Criticality Safety,” is reduced. However, because accident consequence analyses are important to the TWRS-P Project safety approach, the content of Initial Safety Analysis Report (ISAR) Section 4.7, “Results of the Integrated Safety Assessment,” will be strengthened in terms of the discussion of the methodologies used, boundary conditions, input assumptions, and the descriptions of the accident sequences. The content of the PSAR and FSAR is tailored to the purpose of these two documents. The PSAR supports the request for the construction authorization by documenting the safety criteria, the principal design and construction requirements, and the initial safety analysis. The FSAR documents application of these criteria to the completed TWRS-P Facility, documents the final safety analysis, and establishes the facility can be operated safely. The PSAR places greater emphasis on design criteria and construction practices than conduct of operations. The FSAR places emphasis on conduct of operations. Table 4-2 lists the planned differences between the content of the PSAR and FSAR to achieve this focus.	**DOE_G 440.1 Section IV 4.0 FIRE HAZARDS ANALYSES** (Please see document; section too lengthy to include here. This Guide provides definitive guidance on the preparation of the FHA.) **NFPA 801 ¶ 2-3** 2-3* Fire Hazards Analysis. 2-3.1 A documented fire hazards analysis shall be initiated early in the design process or when configuration changes are made to ensure that the fire prevention and fire protection requirements of this standard have been evaluated. This evaluation shall consider the facility's specific design, layout, and anticipated operating needs. The evaluation shall consider acceptable means for separation or control of hazards, the control or elimination of ignition sources, and the suppression of fires. *(See Chapter 3.)* 2-3.2* For existing facilities. a documented fire hazards analysis shall be performed for all areas of the facility.	The DOE and NFPA implementation standards provide specific direction on methodology and content of the FHA; the ISMP reference does not add requirements specific to the preparation of the FHA. Therefore, the ISMP reference may be deleted without changing the way that the safety criterion is implemented. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB).
4.5-21 The fire protection program shall be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position and who has available staff knowledgeable in both fire protection and nuclear safety.	**Section 4.2.3.1 Safety Analysis Reports** (see preceding item)	**DOE_G 440.1 Section IV 5.2 (excerpt)** A sufficient number of qualified fire safety professionals (fire protection engineers, fire department personnel and technicians) should be on staff to develop, implement and maintain the fire protection program.	The DOE implementation standard provides specific direction on fire protection program organization; the ISMP reference does not add requirements. Therefore, the ISMP reference may be deleted without changing the way that the safety criterion is implemented. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB).

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4.5-22 The facility should have on file, and ready to use, a Pre-Fire Plan. The Pre-Fire Plan should assign individual and alternate responsibilities for responding to a fire alarm or call; assessing the situation, suppressing incipient fires, assembling the site Fire Brigade, and if necessary, requesting Hanford Site fire department assistance, personnel evacuation, orderly shutdown of processes, and safeguarding (if necessary) and control of radioactive and hazardous material. The plan should clearly indicate, preferably with the help of site plans and drawings, the locations of the fire department-compatible connections and fire-fighting equipment, such as portable extinguishers, automatic fire suppression systems, sectional valves, standpipes, hydrants, and hoses. It should also indicate the areas of concentrations of combustibles, storages of flammable and combustible liquids, and areas where use of water for fire suppression is restricted because of nuclear criticality or other concerns. The Pre-Fire Plan should be prepared in consultation and coordination with the Hanford Site fire department. The Hanford Site fire department personnel should be given familiarization tours of the Facility at least once a year.	**Section 4.2.3.1 Safety Analysis Reports** (see preceding item)	**DOE_G 440.1 Section III 4.8** Written pre-fire strategies, plans, and standard operating procedures to enhance the effectiveness of site fire-fighting forces, where provided. Such procedures include those governing the use of fire-fighting water or other neutron-moderating materials to suppress fire within or adjacent to moderation controlled areas. Restrictions on the use of water should be fully justified on the basis of criticality safety. **DOE_G 440.1 Section IV 6.9** Training of emergency responders should be based on existing requirements such as those delineated in 29 CFR Parts 1910 and 1926, as well as criteria developed by the NFPA. In addition, emergency responders should be provided with sufficient site-specific training and familiarization to enable them to deal effectively with the unique conditions which characterize DOE facilities. As part of this effort, regular facility tours should be conducted utilizing current pre-plans. **NFPA 801 ¶ 2-7** 2-7* Fire Emergency Plan. A written fire emergency plan shall be developed and shall include the following: (a) Response to fire alarms and fire systems' supervisory alarms; (b) Notification of personnel identified in the plan; (c) Evacuation from the fire area of personnel not directly involved in fire-fighting activities; (d)* Coordination with security forces, radiation protection personnel, and other designated personnel for the admission of public fire department and other emergency response agencies; (e) Fire extinguishment activities, particularly those that are unique to the facility handling radioactive materials *(see Appendix B);* NOTE: NFPA 600. *Standard on Industrial Fire Brigades*, and OSHA 1910.156. *Fire Brigades* should be consulted for additional information. (f) Requirements for periodic drills and exercises to verify the adequacy of the fire emergency plan, including practice sessions coordinated around previously developed valid emergency scenarios particular to the Facility; and (g) Fire prevention surveillance.	The DOE and NFPA implementation standards provide specific direction on fire planning; the ISMP reference does not add requirements. Therefore, the ISMP reference may be deleted without changing the way that the safety criterion is implemented. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB).
4.5 –23 Hot work permits shall be issued for hot work operations conducted in or near the facility. The permit shall document that applicable fire prevention and protection requirements have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations.	**Section 5.6.6 Hot Work Operations** Hot work operations are reviewed and conducted in accordance with SRD Safety Criterion 4.5-19 which governs administrative controls to minimize fire hazards. These controls include those governing the use of ignition sources, reviewing proposed work activities for fire protection impacts, and the establishment of compensatory controls for activities that may impair fire prevention or mitigation features. The fire protection program is described in detail in ISAR Section 8.0, “Fire Safety.”	**DOE_G 440.1 Section III 4.3** Written fire safety procedures governing the use and storage of combustible, flammable, radioactive, and hazardous materials so as to minimize the risk from fire. Such procedures should also exist for fire protection system impairments and for activities such as smoking, hot work, safe operation of process equipment, and other fire prevention measures which contribute to the decrease in fire risk. **NFPA 801, ¶ 2-4** **Fire Protection Program.** A written fire prevention program shall be established and shall include the following: (e) Control of Ignition sources, including, but not limited to, grinding, welding, and cutting; NOTE: See NFPA 51B, *Standard for Fire Prevention in Use of Cutting and Welding Processes*.	The DOE and NFPA implementation standards provide specific direction on hot work permits; the ISMP reference does not add requirements. Therefore, the ISMP reference may be deleted without changing the way that the safety criterion is implemented. Although a section of the ISMP is being deleted as an implementing standard of this SRD Criterion, the ISMP remains part of the authorization basis (AB). SRD Criterion 4.5-19 specifically references both DOE_G 440.1 and NFPA 801 as implementing standards.